

QUALITY ASSURANCE PROJECT PLAN
Operation Breathe Easy
St. Croix, US Virgin Islands

Prepared for:
United States Environmental Protection Agency/Environmental Response Team
Edison, New Jersey

By:
Lockheed Martin/Scientific, Engineering, Response and Analytical Services
Work Assignment Number: SERAS-001

Based on the Intergovernmental Data Quality Task Force Uniform
Federal Policy for Quality Assurance Project Plans
(Final Version 1.1, June 2006)

May 17, 2011

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QAPP Worksheet #1
Title and Approval Page

Site Name/Project Name: Operation Breathe Easy

Site Location: St. Croix, US Virgin Islands

Document Title: Quality Assurance Project Plan for Operation Breathe Easy

Lead Organization: Environmental Protection Agency/Environmental Response Team (EPA/ERT)

Preparer's Name and Organizational Affiliation: Deborah Killeen, Lockheed Martin/Scientific, Engineering, Response and Analytical Services (SERAS)

Preparer's Address, Telephone Number, and E-mail Address: 2890 Woodbridge Avenue, Edison, New Jersey 08837, (732) 321-4245, deborah.a.killeen@lmco.com

Preparation Date (Month/Day/Year): May 17, 2011

Investigative Organization's Project Manager/Date: _____
Signature

Printed Name/Organization: Sella Burchette/ERT Work Assignment Manager

Investigative Organization's Project QA Officer/Date: _____
Signature

Printed Name/Organization: Stephen Blaze/ERT Quality Coordinator

Lead Organization's Project Manager/Date: _____
Signature

Printed Name/Organization: Dennis Miller/SERAS Task Leader

Approval Signatures/Date: _____
Signature

Printed Name/Title: Deborah Killeen/SERAS QA/QC Officer

Approval Authority: SERAS

Other Approval Signatures/Date: _____
Signature

Printed Name/Title: Dennis A. Miller/SERAS Program Manager

Document Control Numbering System : SERAS-001-DQAPP-051711

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QAPP Worksheet #2 QAPP Identifying Information

Site Name/Project Name: Operation Breathe Easy

Site Location: St. Croix, US Virgin Islands

Site Number/Code: NA

Operable Unit:

Contractor Name: Lockheed Martin

Contractor Number: EP-W-09-031

Contract Title: SERAS

Work Assignment Number: SERAS-001

1. Identify regulatory program: Comprehensive Environmental Response and Compensation Liability Act (CERCLA)

2. Identify approval entity: EPA/ERT

3. The QAPP is (select one): Generic X Project Specific

4. List dates of scoping sessions that were held: NA

5. List dates and titles of QAPP documents written for previous site work, if applicable:

Title	Approval Date

6. List organizational partners (stakeholders) and connection with lead organization:
EPA Region II and US Virgin Island Department of Planning and Natural Resources

7. List data users:

EPA Region II and US Virgin Island Department of Planning and Natural Resources

8. If any required QAPP elements and required information are not applicable to the project, then circle the omitted QAPP elements and required information on the attached table. Provide an explanation for their exclusions below:

QAPP Worksheet #2
QAPP Identifying Information
(continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Related Documents
Project Management and Objectives		
2.1 Title and Approval Page	- Title and Approval Page	1
2.2 Document Format and Table of Contents 2.2.1 Document Control Format 2.2.2 Document Control Numbering System 2.2.3 Table of Contents 2.2.4 QAPP Identifying Information	- Table of Contents - QAPP Identifying Information	2
2.3 Distribution List and Project Personnel Sign-Off Sheet	- Distribution List	3
2.3.1 Distribution List	- Project Personnel Sign-Off Sheet	4
2.3.2 Project Personnel Sign-Off Sheet		
2.4 Project Organization	- Project Organizational Chart	5
2.4.1 Project Organizational Chart	- Communication Pathways	6
2.4.2 Communication Pathways	- Personnel Responsibilities and Qualifications Table	7
2.4.3 Personnel Responsibilities and Qualifications	- Special Personnel Training Requirements Table	8
2.4.4 Special Training Requirements and Certification		
2.5 Project Planning/Problem Definition	- Project Planning Session Documentation (including Data Needs tables)	9
2.5.1 Project Planning (Scoping)	- Project Scoping Session Participants Sheet	10
2.5.2 Problem Definition, Site History, and Background	- Problem Definition, Site History, and Background	
	- Site Maps (historical and present)	
2.6 Project Quality Objectives and Measurement Performance Criteria	- Site-Specific PQOs	11
2.6.1 Development of Project Quality Objectives Using the Systematic Planning Process	- Measurement Performance Criteria Table	12
2.6.2 Measurement Performance Criteria		

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QAPP Identifying Information
 (continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Related Documents
2.7 Secondary Data Evaluation	<ul style="list-style-type: none"> - Sources of Secondary Data and Information - Secondary Data Criteria and Limitations Table 	13
2.8 Project Overview and Schedule	- Summary of Project Tasks	14
2.8.1 Project Overview	- Reference Limits and Evaluation Table	15
2.8.2 Project Schedule	- Project Schedule/Timeline Table	16
Measurement/Data Acquisition		
3.1 Sampling Tasks	- Sampling Design and Rationale	17
3.1.1 Sampling Process Design and Rationale	- Sample Location Map	
3.1.2 Sampling Procedures and Requirements	- Sampling Locations and Methods/SOP Requirements Table	18
3.1.2.1 Sampling Collection Procedures	- Analytical Methods/SOP Requirements Table	19
3.1.2.2 Sample Containers, Volume, and Preservation	- Field Quality Control Sample Summary Table	20
3.1.2.3 Equipment/Sample Containers Cleaning and Decontamination Procedures	- Sampling SOPs	
3.1.2.3 Field Equipment Calibration, Maintenance, Testing, and Inspection Procedures	- Project Sampling SOP References Table	21
3.1.2.4 Supply Inspection and Acceptance Procedures	- Field Equipment Calibration, Maintenance, Testing, and Inspection Table	22
3.1.2.6 Field Documentation Procedures		
3.2 Analytical Tasks	- Analytical SOPs	
3.2.1 Analytical SOPs	- Analytical SOP References Table	23
3.2.2 Analytical Instrument Calibration Procedures	- Analytical Instrument Calibration Table	24
3.2.3 Analytical Instrument and Equipment Maintenance, Testing, and Inspection Procedures	- Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table	25
3.2.4 Analytical Supply Inspection and Acceptance Procedures		

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QAPP Identifying Information
(continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Required Documents
3.3 Sample Collection Documentation, Handling, Tracking, and Custody Procedures 3.3.1 Sample Collection Documentation 3.3.2 Sample Handling and Tracking System 3.3.3 Sample Custody	- Sample Collection Documentation Handling, Tracking, and Custody SOPs - Sample Container Identification - Sample Handling Flow Diagram - Example Chain-of-Custody Form and Seal	26 27
3.4 Quality Control Samples 3.4.1 Sampling Quality Control Samples 3.4.2 Analytical Quality Control Samples	- QC Samples Table - Screening/Confirmatory Analysis Decision Tree	28
3.5 Data Management Tasks 3.5.1 Project Documentation and Records 3.5.2 Data Package Deliverables 3.5.3 Data Reporting Formats 3.5.4 Data Handling and Management 3.5.5 Data Tracking and Control	- Project Documents and Records Table - Analytical Services Table - Data Management SOPs	29 30
Assessment/Oversight		
4.1 Assessments and Response Actions 4.1.1 Planned Assessments 4.1.2 Assessment Findings and Corrective Action Responses	- Assessments and Response Actions - Planned Project Assessments Table - Audit Checklists - Assessment Findings and Corrective Action Responses Table	31 32
4.2 QA Management Reports	- QA Management Reports Table	33
4.3 Final Project Report		

QAPP Worksheet #2
QAPP Identifying Information
(continued)

Required QAPP Element(s) and Corresponding QAPP Section(s)	Required Information	Crosswalk to Related Documents
Data Review		
5.1 Overview		
5.2 Data Review Steps	- Verification (Step I) Process Table	34
5.2.1 Step I: Verification		
5.2.2 Step II: Validation	- Validation (Steps IIa and IIb) Process Table	35
5.2.2.1 Step IIa Validation Activities		
5.2.2.2 Step IIb Validation Activities	- Validation (Steps IIa and IIb) Summary Table	36
5.2.3 Step III: Usability Assessment		
5.2.3.1 Data Limitations and Actions from Usability Assessment	- Usability Assessment	NA
5.2.3.2 Activities		
5.3 Streamlining Data Review		
5.3.1 Data Review Steps To Be Streamlined		
5.3.2 Criteria for Streamlining Data Review		
5.3.3 Amounts and Types of Data Appropriate for Streamlining		

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QAPP Worksheet #3
Distribution List

QAPP Recipients	Title	Organization	Telephone Number	Fax Number	E-mail Address	Document Control Number
Sella Burchette	Work Assignment Manager (WAM)	ERT	(732) 321-6726	(732) 321-6724	Burchette.sella@epa.gov	SERAS-001-DQAPP-051711
Philip Campagna	Technical Lead	ERT	(732) 321-6689	(732) 321-6724	campagna.philip@epa.gov	SERAS-001-DQAPP-051711
Stephen Blaze	Quality Coordinator	ERT	(732) 906-6921	(732) 321-6724	blaze.stephen@epa.gov	SERAS-001-DQAPP-051711
Deborah Killeen	QA/QC Officer	SERAS	(732) 321-4245	(732) 494-4021	deborah.a.killeen@lmco.com	SERAS-001-DQAPP-051711
Dennis A. Miller	Task Leader/Program Manager	SERAS	(732) 321-4216	(732) 494-4021	dennis.a.miller@lmco.com	SERAS-001-DQAPP-051711
Howard Brown	DPNR -AQM	DPNR	(340)773-1082	(340) 773-9310	Howard.brown@dpnr.gov.vi	SERAS-001-DQAPP-051711
Nadalie Joseph	DPNR QA	DPNR	(340)773-1082	(340) 773-9310	Nadalie.joseph@dpnr.gov.vi	SERAS-001-DQAPP-051711

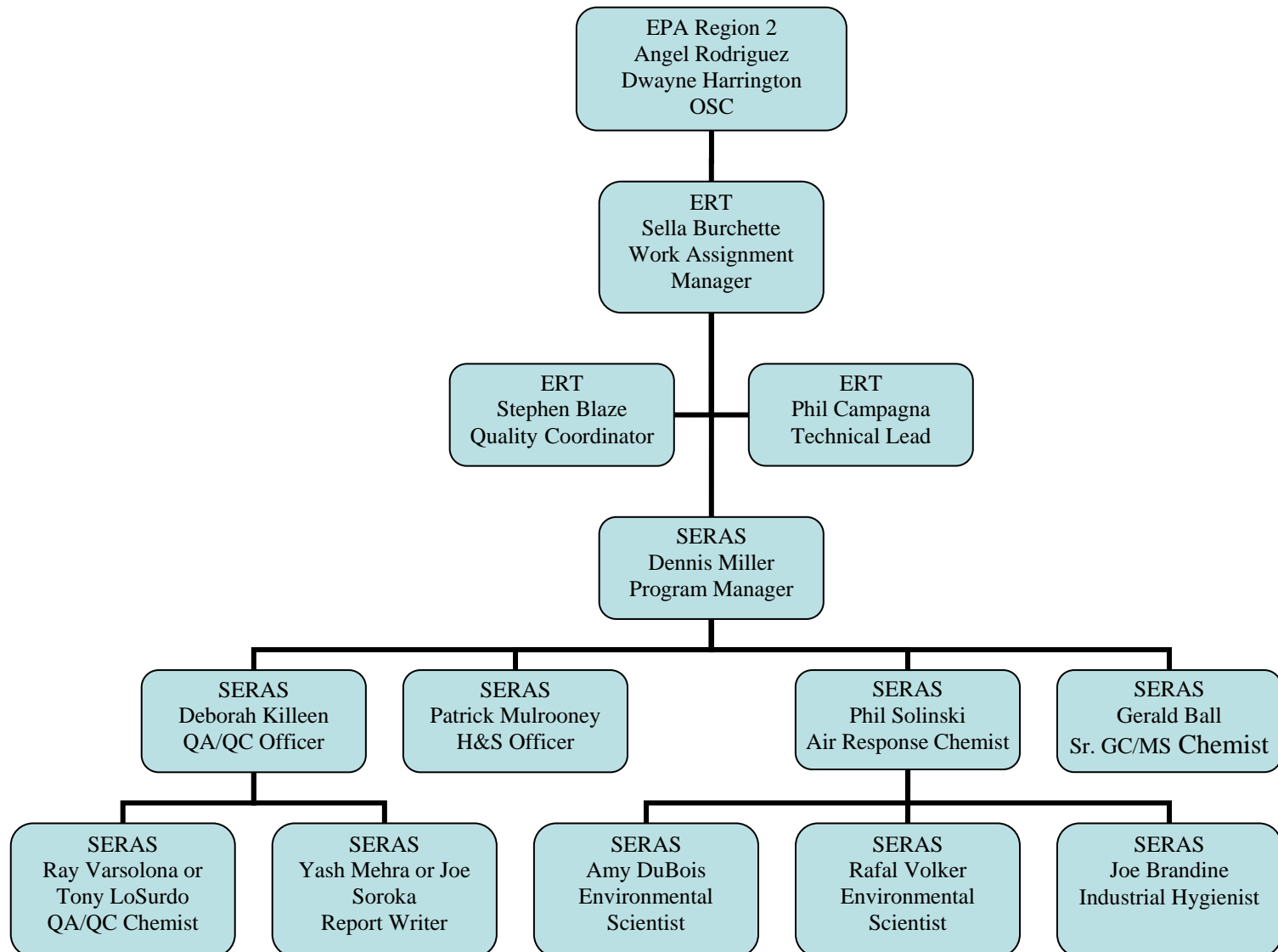
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QAPP Worksheet #4
Project Personnel Sign-Off Sheet

Organization: SERAS/ERT/EPA R2

Project Personnel	Title	Telephone Number	Signature	Date QAPP Read
Sella Burchette	ERT WAM	(732) 321-6725		
Philip Campagna	ERT Technical Lead	(732) 321-6689		
Amy DuBois	SERAS Environmental Scientist	(732) 494-4007		
Philip Solinski	SERAS Air Response Chemist	(732) 321-4283		
Rafael Cody Volker	SERAS Environmental Scientist	(732) 321-4278		
Joseph Brandine	SERAS Industrial Hygienist (Air/Response)	(732) 321-4220		
Angel Rodriguez	EPA R2 OSC	(787) 977-5830		
Dwayne Harrington	EPA R2 OSC	(732) 906-6899		
Howard Brown	VI DPNR	(340) 773-1082		

QAPP Worksheet #5
Project Organizational Chart



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QAPP Worksheet #6
Communication Pathways

<u>Communication Drivers</u>	<u>Responsible Entity</u>	<u>Name</u>	<u>Phone Number</u>	<u>Procedure (Timing, Pathways, etc.)</u>
Approval of initial QAPP and any amendments	ERT Work Assignment Manager ERT Quality Coordinator SERAS Program Manager/Task Leader SERAS QA/QC Officer	Sella Burchette Stephen Blaze Dennis A. Miller Deborah Killeen	(732) 321-6726 (732) 906-6921 (732) 321-4216 (732) 321-4245	SERAS internal peer review, followed by ERT approval, implementation of changes effective only with approved QAPP or QAPP Change Form.
Nonconformance and Corrective Action	SERAS Air Response Chemist SERAS Environmental Scientist ERT Technical Lead SERAS QA/QC Officer SERAS Sr. GC/MS Chemist	Philip Solinski Amy DuBois Philip Campagna Deborah Killeen Gerald Ball	(732) 321-4283 (732) 494-4007 (732) 321-6689 (732) 321-4245 (732) 321-4286	Use of the Work Assignment Field Change Form for field issues. Use of the laboratory nonconformance memos for laboratory deviations.
Posting of Deliverables to the ERT-IMS website	SERAS Air Response Chemist SERAS Environmental Scientist SERAS QA/QC Officer SERAS Administrative Support	Philip Solinski Amy DuBois Deborah Killeen Eileen Ciambotti	(732) 321-4283 (732) 494-4007 (732) 321-4245 (732) 321-4255	As per work assignment, posting of deliverables to ERT-IMS website constitutes delivery to the Work Assignment Manager.
Work Assignment	SERAS Program Manager	Dennis A. Miller	(732) 321-4216	Describes scope of work to SERAS personnel from the ERT Work Assignment Manager.
PWA/ASRR	SERAS Air Response Chemist SERAS Environmental Scientist	Philip Solinski Amy DuBois	(732) 321-4283 (732) 494-4007	Typically filled out by the Task Leader upon receipt of the work assignment and following the project scoping meeting, and distributed to field, analytical, and support personnel. During initial response actions, notification of incoming samples will be relayed by senior air personnel on site.
Health and Safety On-Site Meeting	SERAS Site Health and Safety Officer	Philip Solinski Amy DuBois	(732) 321-4283 (732) 494-4007	Describe potential site hazards, required personal protective equipments, and access to local emergency services.

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QAPP Worksheet #7
Personnel Responsibilities and Qualification Table

Name	Title	Organizational Affiliation	Responsibilities	Education and Experience Qualifications
Philip Solinski	Air/Response Chemist	SERAS	Project Supervision/Monitoring Operations/Site Health and Safety Officer	Minimum BS degree plus 14 years related experience/Lockheed Martin Employee Files
Amy DuBois	Environmental Scientist	SERAS	Project Supervision/Monitoring Operations/Site Health and Safety Officer	Minimum BS degree plus 8 years related experience/Lockheed Martin Employee Files
Dennis Miller	Task Leader/Program Manager	SERAS	Project Oversight/Financial Support	Minimum BS degree plus 14 years related experience/Lockheed Martin Employee Files
Rafal Volker	Environmental Scientist	SERAS	Monitoring/Sampling Operations	Minimum BS degree plus 3years related experience/Lockheed Martin Employee Files
Joe Brandine	Industrial Hygienist	SERAS	Monitoring/Sampling Operations	Minimum BS degree plus 3 years related experience/Lockheed Martin Employee Files
Deborah Killeen	QA/QC Officer	SERAS	QA Oversight/Deliverable Review	Minimum BS degree plus 14 years related experience/Lockheed Martin Employee Files
Raymond Varsolona or Antonio LoSurdo	QA/QC Chemist	SERAS	Data Validation	Minimum BS degree plus 8 years related experience/Lockheed Martin Employee Files
Yash Mehra or Joseph Soroka	Report Writer	SERAS	Analytical Report & Electronic Data Deliverable (EDD) Preparation	Minimum BS degree plus 8 years related experience/Lockheed Martin Employee Files
Gerald Ball	Sr. GC/MS Chemist	SERAS	VOC Sample Analysis	Minimum BS degree plus 14 years related experience/Lockheed Martin Employee Files
Vinod Kansal	GC/MS Chemist	SERAS	Data Review/Lab Oversight	Minimum BS degree plus 8 years related experience/Lockheed Martin Employee Files
Sella Burchette	WAM	ERT	Project Oversight	EPA job-related qualifications/EPA Employee Files
Philip Campagna	Technical Lead	ERT	Project Oversight/Technical Support	EPA job-related qualifications/EPA Employee Files
Stephen Blaze	Quality Coordinator	ERT	QA Oversight	EPA job-related qualifications/EPA Employee Files
Dwayne Harrington/Angel Rodriguez	OSC	EPA Region 2	Technical Oversight/Access Issues	EPA job-related qualifications/EPA Employee Files
Angela Arnold/Howard Brown	Environmental Scientist	VI DPNR	Monitoring/Sampling Operations	DPNR job-related qualifications/DPNR Employee Files

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QAPP Worksheet #8
Special Personnel Training Requirements Table

Project Function	Specialized Training – Title or Description of Course	Training Provider	Training Date	Personnel/Groups Receiving Training	Personnel Titles/ Organizational Affiliation	<u>Location of Training Records/Certificates</u>
Site Health & Safety	OSHA 8-hour refresher	SERAS	Sept 2010	Philip Solinski	Site Safety/Monitoring/Sampling Operations/SERAS	Health & Safety Files
Site Health & Safety	OSHA 8-hour refresher	SERAS	Aug 2010	Amy DuBois	Site Safety/Monitoring/Sampling Operations/SERAS	Health & Safety Files
Site Health & Safety	OSHA 8-hour refresher	SERAS	May 2010	Rafal Volker	Monitoring/Sampling Operations	Health & Safety Files
Site Health & Safety	OSHA 8-hour refresher	SERAS	Feb 2011	Joe Brandine	Monitoring/Sampling Operations	Health & Safety Files
QA Oversight	Lead Auditor Training	IT Corp	Sept 1991	Deborah Killeen	QA/QC Officer/SERAS	Quality Files
QA Oversight	Data Review & Validation	Laboratory Data Consultants	Jan 2007	Deborah Killeen	QA/QC Officer/SERAS	Quality Files
QA Oversight	Uniform Federal Policy for Quality Assurance Project Plans	Advanced Systems	Jan 2006	Deborah Killeen	QA/QC Officer/SERAS	Quality Files
QA Oversight Lab Oversight	Changes to Environmental Laboratory Accreditation	Advanced Systems	May 2009	Deborah Killeen Vinod Kansal	QA/QC Officer/SERAS GC/MS Chemist/SERAS	Quality Files
VOC Analysis	Demonstration of Capability	SERAS	Dec 2010	Gerald Ball	Sr. GC/MS Chemist/SERAS	Quality Files
	Annual Data Integrity Training/Peak Integration Training		July 2010			

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☒ Worksheet Not Applicable (State Reason) A scoping meeting was not held prior to mobilization due to the need for an immediate field response.

QAPP Worksheet #9
Project Scoping Session Participants Sheet

Project Name: Projected Date(s) of Sampling: Project Manager:				Site Name: Site Location:	
Date of Session: Scoping Session Purpose:					
Name	Title	Affiliation	Phone #	E-mail Address	Project Role

Comments/Decisions:

Action Items:

Consensus Decisions:

QAPP Worksheet #10

Problem Definition

<p>The problem to be addressed by the project: St. Croix Central High School located in St. Croix, United States Virgin Islands (USVI) was shut down for two consecutive days due to foul chemical odors that were described as “sulfur-like, burnt match-like and rotten egg-like” by students and faculty. During each of these occurrences, the Department of Planning and Natural Resources (DPNR) and the Virgin Islands Department of Health (VIDOH) responded. Stationary monitoring data was requested from the Hovensa facility to determine whether any of the air permit levels had been exceeded. It was reported that an air inversion meteorological condition effecting the air movement on the island on both days.</p>
<p>EPA/ERT and SERAS personnel were requested to mobilize to the area on Monday, May 16, 2011. A Community Air Monitoring Plan (CAMP) was developed to assess the air impact on the affected communities and to try to determine the unknown source currently impacting the residents of St. Croix. The adjacent communities consist of residential dwellings within one to two miles northwest of the potential sources. These potential sources are active industrial facilities located to the southeast.</p>
<p>The environmental questions being asked: What is the air impact on the affected communities? What are the potential sources of the odors?</p>
<p>Observations from any site reconnaissance reports: N/A</p>
<p>A synopsis of secondary data or information from site reports: Low levels of sulfur dioxide (SO₂) were detected in air quality samples collected on both days according to a joint statement from the Virgin Islands government regulatory agencies (http://stcroixsource.com)</p>
<p>The possible classes of contaminants and the affected matrices: SO₂, hydrogen sulfide (H₂S), volatile organic compounds (VOCs)</p>
<p>The rationale for inclusion of chemical and nonchemical analyses: Monitoring for SO₂, H₂S and total VOCs based on odor complaints and sampling for VOCs to identify any potential sources of contaminants. The odor thresholds for SO₂ and H₂S are 0.009 ppm and 0.0047ppm, respectively. (http://www.extension.iastate.edu/Publications/PM1963A.pdf)</p>
<p>Information concerning various environmental indicators: Meteorological conditions on a given day will dictate the daily placement of any monitoring devices.</p>
<p>Project decision conditions (“If..., then...” statements): If ambient air concentrations exceed 10 parts per million (ppm) for total VOCs for a 15-minute average using the AreaRAE/MultiRAE instruments, then a grab air sample will be collected into a SUMMA canister for VOC analysis by EPA TO-15. If SO₂ readings are recorded at 0.5 ppm (5 times the lowest resolution of the AreaRAE/MultiRAE) or less during a 15-minute average, then instruments with lower sensitivity will be employed to isolate any sources. If H₂S readings are recorded at 5.0 ppm (5 times the lowest resolution of the AreaRAE/MultiRAE) or less during a 15-minute average, then instruments with lower sensitivity will be employed to isolate any sources.</p>

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QAPP Worksheet #11
Project Quality Objectives /Systematic Planning Process Statements

Who will use the data? ERT, EPA Region II, DPNR and VIDOH.
What will the data be used for? Data will be used to assess the air impact on the affected communities and to determine any potential source(s) of the odor complaints.
What type of data is needed? (target analytes, analytical groups, field screening, on-site analytical or off-site laboratory techniques, sampling techniques) SO ₂ , H ₂ S and total VOC on-site monitoring data, meteorological data, VOC analysis by an off-site laboratory
How “good” do the data need to be in order to support the environmental decision? Monitoring data will meet the requirements for Screening Data. VOC data by EPA TO-15 must meet definitive data requirements. The quantitation levels are specified in Worksheet #15. All laboratory analyses will be performed by the ERT/SERAS Laboratory. Worksheets #12 and #28 show the measurement performance criteria that are needed for the quality indicators. Worksheet #20 outlines the field quality control (QC) samples required. VOC analytical data will be validated by SERAS QA/QC Chemists.
How much data are needed? (number of samples for each analytical group, matrix, and concentration) VOCs in air – number of samples will be dependent on total VOC readings from the AreaRAE/MultiRAE.
Where, when, and how should the data be collected/generated? Monitoring data for SO ₂ , H ₂ S and total VOCs and samples for VOCs will be collected in the affected residential communities located within one to two miles of the industrial complex areas during the week of May 16, 2011.
Who will collect and generate the data? Samples will be collected by and analyzed by SERAS personnel.
How will the data be reported? Monitoring data in 15-minute averages and also instantaneous readings will be available for DPNR and VIDOH review. Validated data for VOCs will be reported in a final analytical report prepared in accordance with SERAS SOP #4020, <i>Analytical Report Preparation</i> . Data will be disseminated to EPA Region II by the ERT WAM.
How will the data be archived? Hard copies of all deliverables will be stored in SERAS Central Files and e-copies will be stored on SERAS Local Area Network (LAN). Data will be imported into a Scribe database and posted to the ERT-Information Management System (IMS) website. Data will be archived by SERAS in accordance with Administrative procedure (AP) #34, <i>Archiving Electronic Files</i> .

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☐ Worksheet Not Applicable (State Reason)

QAPP Worksheet 12
Measurement Performance Criteria Table

Matrix	Air (SUMMA [®] Canister)
Analytical Group	VOA
Concentration Level	Low Level

Sampling Procedure¹	Analytical Method/SOP²	Data Quality Indicators (DQIs)	Measurement Performance Criteria	QC Sample and/or Activity Used to Assess Measurement Performance	QC Sample Assesses Error for Sampling (S), Analytical (A) or Both (S&A)
SERAS SOP 1704	EPA TO-15 (SERAS SOP # 1814)	Precision	RPD \pm 25%	Laboratory Duplicates	A
		Accuracy/Bias	\pm 30% Recovery or within control chart limits	Laboratory Control Sample (LCS)	A
		Accuracy/Bias	\pm 40% of mean area response	Internal Standards	A
		Accuracy/Bias (Contamination)	No target compound \geq RL	Method Blank	A
				Trip Blank	S & A
		Accuracy/Bias	\pm 50% or within control chart limits	Limit of Quantitation	A
		Completeness	> 90% SUMMA [®] sampling, > 90% laboratory analysis	Data Completeness Check	S & A

¹Reference number from QAPP Worksheet #21 (see Section 3.1.2)

²Reference number from QAPP Worksheet #23 (see Section 3.2)

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QAPP Worksheet #13
Secondary Data Criteria and Limitations Table

<u>Secondary Data</u>	Data Source (Originating Organization, Report Title, and Date)	Data Generator(s) (Originating Org., Data Types, Data Generation/ Collection Dates)	How Data Will Be Used	Limitations on Data Use
Newspaper Article	St. Croix Source, Noxious Fumes Again Force Central High To Close Early	NA	Background on Incident	Historical Information Only

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QAPPWorksheet#14 **Summary of Project Tasks**

Monitoring Tasks: SO ₂ , H ₂ S and total VOCs will initially be monitored using AreaRAE/MultiRAE equipment. The range for SO ₂ is 0-20 ppm with a resolution of 0.1ppm; the range for H ₂ S is 0-100 ppm with a resolution of 1.0ppm; the range for total VOCs is 0-200ppm with a 0.1ppm resolution and 200-2000ppm with a resolution of 1.0ppm. If the concentrations for SO ₂ and H ₂ S are within five times the resolution, single point monitors equipped with a low level H ₂ S key (1-90 parts per billion [ppb]), a MVIP H ₂ S key (60-1400 ppb) or SO ₂ key (26-750 ppb) and a Jerome 631-X H ₂ S Analyzer (100-990 ppb @ 25 seconds) will be used to verify SO ₂ concentrations 0.5 ppm or less and H ₂ S concentrations 5 ppm or less.
Sampling Tasks: Ambient air samples will be collected for VOC analysis in accordance with SERAS SOP #1704, <i>SUMMA Canister Sampling</i> .
Analysis Tasks: VOC analysis will be conducted in accordance with SERAS SOP #1814, <i>GC/MS Analysis of Sorbent Tubes and Canisters</i> which is based on EPA TO-15.
Quality Control Tasks: Field QC samples are described in Worksheet #20. Analytical QC samples are outlined in Worksheets 12 and 18. QC samples will be collected in accordance with SERAS SOP #2005, <i>Quality Assurance/Quality Control Samples</i> .
Secondary Data: NA
Data Management Tasks: All samples will be assigned a unique location identifier. Field sampling data will be recorded on field data sheets or in field logbooks, and entered into Scribe database software during sampling activities. All samples will be delivered under chain of custody (COC) to the ERT/SERAS laboratory. Laboratory procedures will be reviewed and the data verified for the appropriate quality assurance objectives. All deliverables will be generated in accordance with the appropriate SERAS SOP and posted to the ERT/ IMS) website upon completion.
Documentation and Records: All documentation will be recorded in accordance with SERAS SOP #4001, <i>Logbook Documentation</i> and SOP #2002, <i>Sample Documentation</i> . All Analytical Reports will be prepared in accordance with SERAS SOP #4020, <i>Analytical Report Preparation</i> . Documents and records that may be generated during this project include: WP, QAPP, HASP, Laboratory Logbooks, Site Map, Sample Labels, COC Records, Custody Seals, Monitoring and Sampling Work Sheets, Projected Work Assignment (PWA), Data Review Records, Data Reduction Records, Data Assessment Forms (for definitive data), Data Validation Records (for definitive data), Instrument Printouts, Laboratory Analytical Reports, Scribe Database, Final Analytical Report, Field Change Form (if required)
Assessment/Audit Tasks: No performance audits of field operations are anticipated for this project. The tasks associated with this QAPP are assessed using peer reviews and management system reviews. Peer review enables the field chemist to identify and correct reporting errors before reports are submitted. Management system reviews establish compliance with prevailing management structure, policies and procedures, and ensures that the required data are obtained.
Data Review Tasks: Analytical data will be validated in accordance with draft SERAS SOP #1021, <i>Data Validation Procedures for Routine Volatile Organic Compounds Analysis in Air by TO15/TO17</i> . All project deliverables will receive an internal peer review prior to release, per guidelines established in the SERAS AP #22, <i>Peer Review of SERAS Deliverables</i> .

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QAPP Worksheet 15 Reference Limits and Evaluation Table

Matrix: Air

Analytical Group: VOA

Concentration Level: Low

Analyte	CAS Number	<u>Project Action Limit</u> * (ppbv)	<u>Project Quantitation Limit</u> (ppbv)	<u>SERAS SOP 1814 Analytical Method</u>		<u>Achievable Laboratory Limits</u>	
				MDLs	Method QLs (ppbv)	<u>MDLs</u> ¹ (ppbv)	QLs (ppbv)
Propylene	115-07-1	NS	0.200	NS	0.0400	0.0108	0.200
Dichlorodifluoromethane	75-71-8	NS	0.200	NS	0.0400	0.0088	0.200
Chloromethane	74-87-3	NS	0.200	NS	0.0400	0.0113	0.200
Dichlorotetrafluoroethane	76-14-2	NS	0.200	NS	0.0400	0.0057	0.200
Vinyl Chloride	75-01-4	NS	0.200	NS	0.0400	0.0066	0.200
1,3-Butadiene	106-99-0	NS	0.200	NS	0.0400	0.0132	0.200
Bromomethane	74-83-9	NS	0.200	NS	0.0400	0.0090	0.200
Chloroethane	75-00-3	NS	0.200	NS	0.0400	0.0239	0.200
Acetone	67-64-1	NS	0.200	NS	0.0400	0.0084	0.200
Trichlorofluoromethane	75-69-4	NS	0.200	NS	0.0400	0.0079	0.200
Isopropyl Alcohol	78-83-1	NS	0.200	NS	0.0400	0.0068	0.200
1,1-Dichloroethene	75-35-4	NS	0.200	NS	0.0400	0.0096	0.200
Methylene Chloride	75-09-2	NS	0.200	NS	0.0400	0.0076	0.200
Trichlorotrifluoroethane	76-13-1	NS	0.200	NS	0.0400	0.0091	0.200
trans-1,2-Dichloroethene	156-60-5	NS	0.200	NS	0.0400	0.0076	0.200
1,1-Dichloroethane	75-34-3	NS	0.200	NS	0.0400	0.0082	0.200
MTBE	1634-04-4	NS	0.200	NS	0.0400	0.0080	0.200
Vinyl Acetate	108-05-4	NS	0.200	NS	0.0400	0.0092	0.200
2-Butanone	78-93-3	NS	0.200	NS	0.0400	0.0061	0.200
cis-1,2-Dichloroethene	156-59-2	NS	0.200	NS	0.0400	0.0103	0.200
Ethyl Acetate	141-78-6	NS	0.200	NS	0.0400	0.0057	0.200
Hexane	110-54-3	NS	0.200	NS	0.0400	0.0071	0.200
Chloroform	67-66-3	NS	0.200	NS	0.0400	0.0087	0.200

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QAPP Worksheet 15 Reference Limits and Evaluation Table

Matrix: Air

Analytical Group: VOA

Concentration Level: Low

Analyte	CAS Number	<u>Project Action Limit</u> * (ppbv)	<u>Project Quantitation Limit</u> (ppbv)	<u>SERAS SOP 1814 Analytical Method</u>		<u>Achievable Laboratory Limits</u>	
				MDLs	Method QLs (ppbv)	<u>MDLs</u> ¹ (ppbv)	QLs (ppbv)
Tetrahydrofuran	109-99-9	NS	0.200	NS	0.0400	0.0117	0.200
1,2-Dichloroethane	107-06-2	NS	0.200	NS	0.0400	0.0096	0.200
1,1,1-Trichloroethane	71-55-6	NS	0.200	NS	0.0400	0.0107	0.200
Benzene	71-43-2	NS	0.200	NS	0.0400	0.0081	0.200
Carbon Tetrachloride	56-23-5	NS	0.200	NS	0.0400	0.0088	0.200
Cyclohexane	110-82-7	NS	0.200	NS	0.0400	0.0072	0.200
1,2-Dichloropropane	78-87-5	NS	0.200	NS	0.0400	0.0101	0.200
1,4-Dioxane	123-91-1	NS	0.200	NS	0.0400	0.0102	0.200
Trichloroethene	79-01-6	NS	0.200	NS	0.0400	0.0094	0.200
Heptane	142-82-5	NS	0.200	NS	0.0400	0.0108	0.200
cis-1,3-Dichloropropene	10061-01-5	NS	0.200	NS	0.0400	0.0072	0.200
Methyl Isobutyl Ketone	108-10-1	NS	0.200	NS	0.0400	0.0067	0.200
trans-1,3-Dichloropropene	10061-02-6	NS	0.200	NS	0.0400	0.0103	0.200
1,1,2-Trichloroethane	79-00-5	NS	0.200	NS	0.0400	0.0061	0.200
Toluene	108-88-3	NS	0.200	NS	0.0400	0.0072	0.200
2-Hexanone	591-78-6	NS	0.200	NS	0.0400	0.0069	0.200
Dibromochloromethane	124-48-1	NS	0.200	NS	0.0400	0.0070	0.200
1,2-Dibromoethane	106-93-4	NS	0.200	NS	0.0400	0.0083	0.200
Tetrachloroethene	127-18-4	NS	0.200	NS	0.0400	0.0079	0.200
Chlorobenzene	108-90-7	NS	0.200	NS	0.0400	0.0083	0.200
Ethylbenzene	100-41-4	NS	0.200	NS	0.0400	0.0077	0.200
m&p-Xylene	108-38-3/ 106-42-3	NS	0.200	NS	0.0400	0.0076	0.200

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QAPP Worksheet 15 Reference Limits and Evaluation Table

Matrix: Air

Analytical Group: VOA

Concentration Level: Low

Analyte	CAS Number	Project Action Limit * (ppbv)	Project Quantitation Limit (ppbv)	SERAS SOP 1814 Analytical Method		Achievable Laboratory Limits	
				MDLs	Method QLS (ppbv)	MDLs ¹ (ppbv)	QLs (ppbv)
Bromoform (Tribromomethane)	75-25-2	NS	0.200	NS	0.0400	0.0066	0.200
Styrene	100-42-5	NS	0.200	NS	0.0400	0.0083	0.200
1,1,2,2-Tetrachloroethane	79-34-5	NS	0.200	NS	0.0400	0.0090	0.200
o-Xylene	95-47-6	NS	0.200	NS	0.0400	0.0074	0.200
Ethyltoluene	622-96-8	NS	0.200	NS	0.0400	0.0078	0.200
1,3,5-trimethylbenzene	108-67-8	NS	0.200	NS	0.0400	0.0054	0.200
1,2,4-Trimethylbenzene	95-63-6	NS	0.200	NS	0.0400	0.0064	0.200
1,3-Dichlorobenzene	541-73-1	NS	0.200	NS	0.0400	0.0071	0.200
1,4-Dichlorobenzene	106-46-7	NS	0.200	NS	0.0400	0.0067	0.200
1,2-Dichlorobenzene	95-50-1	NS	0.200	NS	0.0400	0.0090	0.200

¹From LOD study dated 4/8/11 on instrument Air Toxics #1

NS = Not Specified

NA = Not Available

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QAPP Worksheet #16
Project Schedule Timeline Table

Activities	Organization	Dates (MM/DD/YY)		Deliverable	Deliverable Due Date
		Anticipated Date(s) of Initiation	Anticipated Date of Completion		
Field Activities	SERAS	05/16/11	05/22/11	NA	
Sample Analysis	SERAS	05/23/11	05/31/11	Preliminary Analytical Results	5 BD after receipt of samples
Data Validation/Preparation of Analytical Report	SERAS	05/31/11 (receipt of data package)	6/7/11	Final Analytical Report	5 BD after receipt of data package

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QAPP Worksheet #17
Monitoring/Sampling Design and Rationale

Describe and provide a rationale for choosing the sampling approach (e.g., grid system, biased statistical approach): ERT, EPA Region II, DPNR and/or VIDOH personnel will determine where the monitoring equipment will be placed on a daily basis based on the configuration of the property/building to be monitored/sampled, the actual wind direction on any given day, access to the areas of concern and areas where equipment will remain secure.

Describe the sampling design and rationale in terms of what matrices will be sampled, what analytical groups will be analyzed and at what concentration levels, the sampling locations (including QC, critical, and background samples), the number of samples to be taken, and the sampling frequency (including seasonal considerations) [Refer to Worksheet #18 for details]: Grab samples for VOCs will be collected from areas where the total VOC measurement using the AreaRAEs/MultiRAEs exceed the 10 ppm project trigger level. The number of samples collected will be contingent upon the readings recorded. Additional monitoring will be conducted based on the measurements recorded with the AreaRAEs/MultiRAEs using either single point monitors or the Jerome H₂S Analyzer.

Parameter	Project Trigger Level	Action Taken
SO ₂	0.5 ppm	Monitor with equipment set up to record readings ≤0.5 ppm
H ₂ S	5 ppm	Monitor with equipment set up to record readings ≤5.0 ppm
Total VOCs	10 ppm	Collect grab sample of ambient air in SUMMA canister for VOC analysis

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QAPP Worksheet #18
Sampling Locations and Methods/SOP Requirements Table

Sampling Location/ID Number	Matrix	Depth ()	Analytical Group	Concentration Level	Number of Samples (identify field duplicates)	Sampling SOP Reference¹	Rationale for Sampling Location
TBD*	Air	NA	VOC	Low	TBD	1704	Judgmental

¹Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #21)

*Information to be added once sampling locations are available

TBD = To Be Determined

NA = Not Available

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QAPP Worksheet #19
Analytical SOP Requirements Table

Matrix	Analytical Group	Concentration Level	Analytical and Preparation Method/SOP Reference ¹	Sample Volume	Containers (number, size, and type)	Preservation Requirements (chemical, temperature, light protected)	Maximum Holding Time (preparation/analysis)
Ambient Air (SUMMA [®] Canister)	VOA	Low	SERAS SOP #1814	4 to 5-L	6-L SUMMA canister	None	30 days

¹Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23)

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QAPP Worksheet #20
Field Quality Control Sample Summary Table

Matrix	Analytical Group	Concentration Level	Analytical and Preparation SOP Reference¹	No. of Sampling Locations	No. of Field Duplicate Pairs	No. of MS	No. of Trip Blanks	No. of Field Blanks²	No. of PT Samples	Total No. of Samples to Lab
Air (SUMMA® Canister)	VOA	Low	SERAS SOP #1814	TBD	TBD	NA	1/shipment	NA	NA	TBD

¹ Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23)

² One field (bottle) blank will be collected per lot of bottles used since dedicated equipment will be used for sampling.

TBD = To Be Determined

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QAPP Worksheet #21
Project Monitoring/Sampling SOP References Table

Reference Number	Title, Revision Date and/or Number	Originating Organization	Equipment Type	Modified for Project Work? (Check if yes)	Comments
1704	SUMMA Canister Sampling	SERAS	6-L SUMMA Canister	<input type="checkbox"/>	
2002	Sample Documentation	SERAS	NA	<input type="checkbox"/>	
2004	Sample Packaging and Shipment	SERAS	NA	<input type="checkbox"/>	
2005	Quality Assurance/Quality Control Samples	SERAS	NA	<input type="checkbox"/>	
2115	Single Point Monitor	SERAS	Tapemeter	<input type="checkbox"/>	
2139	Multi Gas Monitor PGM-50/Photoionization Detector (PID) MultiRAE Plus	SERAS	Gas Analyzer	<input type="checkbox"/>	
700-0037-D	Jerome® 631-X Hydrogen Sulfide Analyzer Operation Manual	Arizona Instrument	Gas Analyzer	<input type="checkbox"/>	
4001	Logbook Documentation	SERAS	NA	<input type="checkbox"/>	
4005	Chain of Custody Procedures	SERAS	NA	<input type="checkbox"/>	

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QAPP Worksheet #22
Field Equipment Calibration, Maintenance, Testing, and Inspection Table

Field Equipment	Calibration Activity	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference ¹
SUMMA [®] canisters	NA	Clean canister	Analyze*	Check for leaks	As cleaned and tested	<RL	Re-clean and re-analyze	Lab Technician	SERAS SOP #1739
MultiRAE/ AreaRAE SO ₂ & H ₂ S sensors	Zero and Span Cal	Check raw sensor readings quarterly or as needed	Bump	Check instrument set to high pump speed	Calibrate before initial use/weekly/as needed	+/- 10%	Check gas concentration. Recalibrate, check sensor expiration, check raw sensor readings, replace sensor	Field Personnel	SERAS SOP #2139 and manufacturer's technical note (TN-114), Sensor Specifications and Cross Sensitivities
Single Point Monitor		Replace filters annually	Verify system response, Perform leak test, Perform gross alarm test		Monthly			Air Technician/ Field Personnel	SERAS Calibration Datasheets & User Manual
Jerome H ₂ S Analyzer	Functionality Check, Zero Check	Charge unit, charge spare battery		Check digital display, check flow	Monthly	Average of last 5 results between 0.20-0.30 ppm	Perform heat regeneration, check permeation tube	Air Technician/ Field Personnel	SERAS Calibration Datasheets & User Manual
Jerome H ₂ S Analyzer	Send out for factory calibration annually	Replace battery/Change internal filters/ Change intake filter disc			Every 2 years/After 6 months or as needed/As Needed			Air Technician	SERAS Calibration Datasheets & User Manual

¹Specify the appropriate reference letter or number from the Project Sampling SOP References table (Worksheet #21)

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QAPP Worksheet #23

Analytical SOP References Table

Reference Number	Title, Revision Date, and/or Number	Definitive or Screening Data	Analytical Group	Instrument	Organization Performing Analysis	Modified for Project Work?
SERAS SOP #1814	GC/MS Analysis of Sorbent Tubes and Canisters	Definitive	Volatile Organic Compounds	GC/MS	ERT/SERAS Laboratory	No
						<input type="checkbox"/>

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QAPP Worksheet #24
Analytical Instrument Calibration Table

Instrument	Calibration Procedure	Frequency of Calibration	Acceptance Criteria	Corrective Action (CA)	Person Responsible for CA	SOP Reference¹
GC/MS	Initial calibration (IC), minimum 5-points for all analytes	Initially prior to sample analysis. After changes to instrument and when instrument does not meet method criteria.	Relative standard deviation (RSD) = $\leq 30\%$, two compounds may exceed up to 40% RSD	Inspect system for problems; perform maintenance (i.e. ion source cleaning, column replacement, etc.), check calibration standards. Rerun IC, reanalyze affected samples	Analyst	SERAS SOP #1814
GC/MS	Initial Calibration Verification (ICV)	Immediately following an initial calibration	Percent recovery (%R) = $\pm 30\%$	Rerun ICV. If needed, inspect system for problems, perform maintenance (i.e. ion source cleaning, column replacement, etc.), rerun IC	Analyst	SERAS SOP #1814
GC/MS	Daily Continuing Calibration Check (CCC)	Every 24 hours	Percent difference (%D) = $\pm 30\%$	Rerun CCC. If needed, inspect system for problems, perform maintenance (i.e. ion source cleaning, column replacement, etc.), rerun IC	Analyst	SERAS SOP #1814

¹Specify the appropriate reference letter or number from the Analytical SOP References table (Worksheet #23)

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QAPP Worksheet #25

Analytical Instrument and Equipment Maintenance, Testing, and Inspection Table

Instrument/ Equipment	Maintenance Activity	Testing Activity	Inspection Activity	Frequency	Acceptance Criteria	Corrective Action	Responsible Person	SOP Reference ¹
GC/MS	Check gas supply daily, bake or change trap as needed, manual tune if 4-Bromofluorbenzene (BFB) not within criteria, cut or change column, change septum as needed.	VOC Analysis	Check ion source, gas supply, septum seal, vacuum, trap	Prior to sample analysis or when instrument does not meet criteria	BFB criteria achieved, Relative standard deviation (RSD) = $\leq 30\%$, two compounds may exceed up to 40% RSD in the IC	Recalibrate and/or perform necessary instrument maintenance, check calibration standards, re-analyze affected samples.	Analyst	SERAS SOP #1814

¹Specify the appropriate reference letter or number from Analytical SOP References table (Worksheet #23)

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QAPP Worksheet #26
Sample Handling System

SAMPLE COLLECTION, PACKAGING, AND SHIPMENT
Sample Collection (Personnel/Organization): Phil Solinski, Amy Dubois, Joe Brandine, Rafal Volker/SERAS
Sample Packaging (Personnel/Organization): Phil Solinski, Amy Dubois, Joe Brandine, Rafal Volker/SERAS
Coordination of Shipment (Personnel/Organization): Phil Solinski, Amy Dubois, Joe Brandine, Rafal Volker/SERAS
Type of Shipment/Carrier: FedEx
SAMPLE RECEIPT AND ANALYSIS
Sample Receipt (Personnel/Organization): Sample Receiving Personnel/ERT/SERAS Laboratory
Sample Custody and Storage (Personnel/Organization): Sample Receiving Personnel/ERT/SERAS Laboratory
Sample Preparation (Personnel/Organization):
Sample Determinative Analysis (Personnel/Organization): Sr. GC/MS Chemist/ ERT/SERAS Laboratory
SAMPLE ARCHIVING
Field Sample Storage (No. of days from sample collection): Samples will be submitted to the ERT/SERAS Laboratory within 48 hours.
Sample Extract/Digestate Storage (No. of days from extraction/digestion): Not applicable
Biological Sample Storage (No. of days from sample collection): Not applicable
SAMPLE DISPOSAL
Personnel/Organization: Larry Martin/SERAS Sample Receiving Technician/Hazardous Waste Coordinator
Number of Days from Analysis: SUMMA canisters will be cleaned and recertified once data have been validated and released.

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QAPP Worksheet #27

Sample Custody Requirements

Field Sample Custody Procedures (sample collection, packaging, shipment, and delivery to laboratory):

Each sample canister will be affixed with a label identifying the sample number, sample location, collection date, collection time, matrix, and requested analysis. The canisters will be stored and mobilized in metal shipping containers. At least two custody seals will be placed across the shipping containers to ensure sample integrity.

Scribe will be used for sample management, as well as, generation of sample documentation, such as, labels and COC records. All COC records will receive a peer review in the field and prior to relinquishment in accordance with SERAS SOP # 4005, *Chain of Custody Procedures*. The samples collected by SERAS personnel will be sent to the ERT/SERAS Laboratory in Edison, NJ and relinquished under the COC to the SERAS Sample Receiving Personnel for VOC analysis in accordance with SERAS SOP #2004, *Sample Packaging and Shipment*.

Procedures outlined in SERAS SOP #2002 and #2004 will be applied (refer to Worksheet #21).

Laboratory Sample Custody Procedures (receipt of samples, archiving, and disposal):

A sample custodian at the ERT/SERAS Laboratory will accept custody of the samples; check them for discrepancies, integrity, etc., before relinquishing to the appropriate department for analysis. The Analytical Support Leader and the Task Leader will be notified of any problems. No samples will be archived at the laboratory.

Sample Identification Procedures:

Each sample will be identified with a unique identification number at the time of collection, and a unique laboratory identification will be assigned to each sample during receipt at the ERT/SERAS Laboratory. The number will be listed on the label of every sample container collected at a given location.

Procedures outlined in SERAS SOP #2002 will be applied (refer to Worksheet #21).

Chain-of-custody Procedures:

Chain-of-custody records will be generated for all samples submitted for analysis using Scribe database software. Procedures outlined in SERAS SOP #4005, *Chain of Custody Procedures* will be applied.

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QAPP Worksheet #28
QC Samples Table

Matrix	Ambient Air (SUMMA [®] Canister)					
Analytical Group	VOA					
Concentration Level	Low					
Sampling SOP	SERAS SOP #1704					
Analytical Method/ SOP Reference	SERAS SOP #1814					
Sampler's Name	Phil Solinski, Amy DuBois, Joe Brandine, Rafal Volker					
Field Sampling Organization	SERAS					
Analytical Organization	ERT/SERAS Laboratory					
No. of Sample Locations	TBD					
QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Initial Calibration	Initially	≤ 30% RSD with 2 compounds up to 40%	Clean, repair, re-analyze	Analyst	Accuracy	≤ 30% RSD with 2 compounds up to 40%
Continuing Calibration	Every 24 hours	± 30% D	Clean, repair, re-analyze	Analyst	Accuracy	± 30% D
Internal Standard	Each sample	±40% of daily calibration IS response	Re-analyze sample	Analyst	Precision/Accuracy	±40% of daily calibration IS response
Instrument Performance Check Samples	Every 24 hours	As per specified method	Clean, repair, re-analyze	Analyst	Sensitivity	As per specified method
LCS	5% of samples	± 30% R or within control chart limits	Clean, repair, re-analyze	Analyst	Accuracy/Bias	± 30% R or within control chart limits

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QAPP Worksheet #28
QC Samples Table

Matrix	Ambient Air (SUMMA [®] Canister)					
Analytical Group	VOA					
Concentration Level	Low					
Sampling SOP	SERAS SOP #1704					
Analytical Method/ SOP Reference	SERAS SOP #1814					
Sampler's Name	Phil Solinski, Amy DuBois, Joe Brandine, Rafal Volker					
Field Sampling Organization	SERAS					
Analytical Organization	ERT/SERAS Laboratory					
No. of Sample Locations	TBD					
QC Sample:	Frequency/Number	Method/SOP QC Acceptance Limits	Corrective Action	Person(s) Responsible for Corrective Action	Data Quality Indicator (DQI)	Measurement Performance Criteria
Method Blank	1/24-hour clock	< Reporting Limit	Clean, repair, re-analyze	Analyst	Accuracy/Bias Contamination	< Reporting Limit
Trip Blank	1/shipment	< Reporting Limit	NA	NA	Accuracy/Bias Contamination	< Reporting Limit
LOD/LOQ Study	Annual	LOD = < Reporting Limit LOQ = $\pm 50\%$ or within control chart limits	Clean, repair, re-analyze.	Analyst	Sensitivity	LOD = < Reporting Limit LOQ = $\pm 50\%$ or within control chart limits

NA = Not applicable

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QAPP Worksheet #29
Project Documents and Records Table

Sample Collection Documents and Records	On-site Analysis Documents and Records	Off-site Analysis Documents and Records	Data Assessment Documents and Records	Other
Monitoring Worksheets Chain of Custody Records Sample Labels Custody Seals, Sampling Worksheets Field Change Form (if necessary)	NA	Instrument run logs Preventive Maintenance logs Instrument printouts Internal COC Records Standard Receipt Logs Data Reduction Records Data Review Records Analytical Results Calibration Records	Data Assessment Forms Data Validation Check Records	Final Analytical Reports

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☐ Worksheet Not Applicable (State Reason)

QAPP Worksheet #30
Analytical Services Table

Matrix	Analytical Group	Concentration Level	Sample Location/ID Numbers	Analytical SOP	Data Package Turnaround Time	Laboratory/Organization (Name and Address, Contact Person and Telephone Number)	Backup Laboratory/Organization (Name and Address, Contact Person and Telephone Number)
Ambient Air (SUMMA® Canister)	VOA	Low Level	See Worksheet #18	SERAS SOP #1814	Analytical Results & Data Package in 5 business days from receipt of samples	Lockheed Martin – SERAS 2890 Woodbridge Ave Edison, NJ 08837 732-321-4200 Vinod Kansal GC/MS Chemist	NA

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QAPP Worksheet #31
Planned Project Assessments Table

Assessment Type	Frequency	Internal or External	Organization Performing Assessment	Person(s) Responsible for Performing Assessment (Title and Organizational Affiliation)	Person(s) Responsible for Responding to Assessment Findings (Title and Organizational Affiliation)	Person(s) Responsible for Identifying and Implementing Corrective Actions (CA) (Title and Organizational Affiliation)	Person(s) Responsible for Monitoring Effectiveness of CA (Title and Organizational Affiliation)
Laboratory Accreditation Audit	Every 2 years	External	NELAC Accreditation Agency	NJDEP	Deborah Killeen, QA/QC Officer, SERAS Laboratory	Vinod Kansal, GC/MS Chemist, SERAS Laboratory	NELAC Accreditation Agency
Laboratory Audit	Annual	Internal	SERAS Laboratory	Deborah Killeen, QA/QC Officer, SERAS	Vinod Kansal, GC/MS Chemist, SERAS Laboratory	Gerald Ball Sr. GC/MS Chemist, SERAS Laboratory	Deborah Killeen, QA/QC Officer, SERAS
Performance Evaluation Sample	Annual	Internal	SERAS	Deborah Killeen, QA/QC Officer, SERAS	Vinod Kansal, GC/MS Chemist, SERAS Laboratory	Gerald Ball Sr. GC/MS Chemist, SERAS Laboratory	Deborah Killeen, QA/QC Officer, SERAS

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QAPP Worksheet #32
Assessment Findings and Corrective Action Responses

Assessment Type	Nature of Deficiencies Documentation	Individual(s) Notified of Findings (Name, Title, Organization)	Timeframe of Notification	Nature of Corrective Action Response Documentation	Individual(s) Receiving Corrective Action Response (Name, Title, Org.)	Timeframe for Response
Field Observations/ Deviations from Work Plan	Logbook	Phil Solinski/SERAS Air Response Chemist Amy DuBois/SERAS Environmental Scientist	Immediately	Field Change Form	Phil Solinski/SERAS Air Response Chemist Amy DuBois/SERAS Environmental Scientist	Within 24 hours of change
Lab Performance Audits	Audit report	ERT/SERAS Laboratory	Within 30 days	Corrective Action Plan	Regulatory Agency	Within 30 days
Internal Lab Performance Audits	Audit Report	Vinod Kansal, GC/MS Chemist, SERAS	Within 45 Days	Corrective Action Plan	Deborah Killeen, QA/QC Officer, SERAS	Within 45 Days

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QAPP Worksheet #33
QA Management Reports Table

Type of Report	Frequency (daily, weekly monthly, quarterly, annually, etc.)	Projected Delivery Date(s)	Person(s) Responsible for Report Preparation (Title and Organizational Affiliation)	Report Recipient(s) (Title and Organizational Affiliation)
Technical Report	Monthly	10 th of the month following performance period	Phil Solinski, Task Leader/SERAS	ERT Project Officer and Work Assignment Manager
QA Report	Quarterly	February, May, August, November	Deborah Killeen, QA/QC Officer/SERAS	ERT Project Officer and Quality Coordinator

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QAPP Worksheet #34
Verification (Step I) Process Table

Verification Input	Description	Internal/ External	Responsible for Verification (Name, Organization)
Chain of Custody Record	Reviewed by Field Sampling Personnel in field and Data Validation Group prior to final analytical report preparation	Internal	SERAS
Laboratory Data Package	Reviewed for measurement performance criteria	Internal	SERAS QA/QC Chemist
Analytical Report	Reviewed for accuracy	Internal	SERAS QA/QC Officer SERAS Analytical Support Chemist SERAS Program Manager

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QAPP Worksheet #35
Validation (Steps IIa and IIb) Process Table

Step IIa/IIb	Validation Input	Description	Responsible for Validation (Name, Organization)
IIa	SOPs	Ensure that the sampling methods/procedures outlined in the QAPP were followed and any deviations noted	SERAS TL, ERT WAM
IIa	COC records	Examine COC records and match with requested analyses	SERAS QA/QC Chemist
IIa	Lab Data Package	Examine packages against COC forms (holding times, sample handling, methods, sample identifications, qualifiers)	SERAS QA/QC Chemist
IIb	Lab Data Package	Quantify data based on QC deficiencies (precision/accuracy, %RSD, %D, etc.)	SERAS QA/QC Chemist, QA/QC Officer, Analytical Support Chemist, Program Manager

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QAPP Worksheet #36
Validation (Steps IIa and IIb) Summary Table

Step IIa/IIb	Matrix	Analytical Group	Concentration Level	Validation Criteria	Data Validator (title and organizational affiliation)
IIb	Ambient Air (SUMMA [®] Canister)	VOA	Low	Draft SOP #1021, <i>Data Validation for Routine Volatile Organic Compounds in Air by TO-15/TO-17 Analysis</i>	SERAS QA/QC Group

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☒ Worksheet Not Applicable (State Reason) EPA Region II will be responsible for assessing the usability of the data.

QAPP Worksheet #37

Usability Assessment

Summarize the usability assessment process and all procedures, including interim steps and any statistics, equations, and computer algorithms that will be used:
Describe the evaluative procedures used to assess overall measurement error associated with the project:
Identify the personnel responsible for performing the usability assessment: EPA Region II
Describe the documentation that will be generated during usability assessment and how usability assessment results will be presented so that they identify trends, relationships (correlations), and anomalies: